REMARKS

Claims Amendment. Claim 4 has been amended as suggested by the Examiner. The sole ground of rejection was directed to a typographical error in the amendment, with the objection under 35 U.S.C. § 112, second paragraph. It is submitted that this claim is now allowable, there being no other objection to claim 4. (*See* Office Action, ¶ 11)

Claim 21 was rejected under 35 U.S.C. § 102(b) as anticipated by Simon et al. as evidenced by WO/99/35167. Claim 21 has been amended to remove the language "having the" in line 1 of claim 21, and submitting "with the" in lieu thereof. It is submitted that this amended overcomes the objection of record, in that Simon et al. does not disclose or anticipate the specific peptides set forth in claim 21. Claim 21 is further amended to correct a typographic error similar to that in claim 4. It is submitted that claims 21-24 are now allowable, there being no other grounds of rejection.

35 U.S.C. § 112, first paragraph, rejection of Claims 1 - 3, 5 - 9 and 15 - Written Description. It is again noted as a preliminary matter that even under the analysis of the Examiner, claim 6 is not subject to rejection on this ground. The cyclic peptide of claim 6 is specifically described, see Formula XI of Fig. 1, and use of this cyclic peptide is specifically disclosed, see page 9, line 31 and following. Thus Applicants clearly had possession, under any analysis, of both the peptides disclosed in Table 1 and the peptide of Formula XI of Fig. 1. Accordingly, neither claim 4 nor claim 6 is subject to this ground of rejection.

The claims are directed to a limited class of peptide antigens that contain a modified arginine residue and that are derived from (pro)filaggrin. Applicants show that the modified arginine residue, such as citrulline, may be at one of several locations (see peptides cfc1-5) and may be present multiple times (see peptides cfc6-9), all resulting in peptides showing reactivity with a cohort of auto-antibodies. That the genus may be large is not a proper ground of rejection. The examples given constitute representative examples of different peptide antigens meeting the definition of the claims. With respect to exclusion of

peptide antigens in which arginine residues are not modified, it is first noted that claim 1 is not a method claim, so that a positive step for that point is not required. Second, the skilled artisan may, by examining a peptide, ascertain whether the arginine residues are modified, and thus determine whether a given peptide is included within the scope of the claim.

35 U.S.C. § 112, first paragraph, rejection of Claims 1 - 3, 5- 9 and 15 - Enablement. As discussed above with respect to written description, this ground of rejection is respectfully traversed. Applicants further note that the amendments made to claim 1 are believed to overcome this ground of rejection. Applicants further note that claim 6 should, under the Examiner's holding, be allowable, since it claims the cyclic peptide of SEQ ID NO:10 which the Examiner agrees is enabled.

The Applicants note that the last sentence on page 11 of the prior amendment should have read "while another antibody will better recognize the antigen."

35 U.S.C. § 112, second paragraph, rejection of Claims 7 - Indefinite. It is asserted that claim 7 is indefinite in that claim 7 recites a synthetic peptide, while claim 1 recites a "...peptide derived from a contiguous stretch of amino acid residues encoded by mRNA..." There is no conflict or inconsistency, in that the peptide of claim 1 is described as "a peptide . . . reactive with autoimmune antibodies from a patient suffering from rheumatoid arthritis, wherein the peptide is derived from a contiguous stretch of amino acid residues encoded by mRNA . . ." That is, the peptide of claim 1 is not limited to peptides actually made through mRNA means, but rather the peptide of claim 1 must simply be "derived" from a contiguous stretch of amino acid residues encoded by mRNA. That is, the peptide of claim 1 may be made by any means, including the synthetic means of claim 7, so long as the peptide is "derived" from a "contiguous stretch of amino acid residues encoded by mRNA".

35 U.S.C. § 112, first paragraph, rejection of Claims 1, 3-9, 15-30 - New Matter. The Examiner objects to the limitation "of about 21 or fewer amino acids". Support for this limitation is found in

the Examples, and specifically the sequences disclosed in SEQ ID NO:1 through SEQ ID NO:10. Each of SEQ ID NO:1 through SEQ ID NO:9 contain 19 amino acid residues. SEQ ID NO:10, which is a cyclic peptide containing a cystine disulfide bridge, contains 21 amino acid residues. Thus an inherent characteristic of the disclosed examples themselves provides support for the limitation "of about 21 or fewer" amino acid residues.

It is noted that claims 4 and 6, drawn to the specific peptides of SEQ ID NO:1 through SEQ ID NO:9, and to SEQ ID NO:10, are allowable over this objection, in that each of the specific peptides claimed meets this limitation.

With respect to claim 9, this claim has been amended to properly recite that the modified arginine residues are formed during a post-translational modification.

Claims 21-24 rejected under 35 U.S.C. § 102(b) as anticipated by Simon et al. as evidenced by WO/99/35167. As noted above under "Claims Amendment" claim 21 has been amended, thereby changing the open language "having". It is submitted that Simon et al. does not teach any of the specific peptides claimed, and thus does not anticipate the invention as claimed.

35 U.S.C. § 112, second paragraph, rejection of Claims 4 - Indefinite. Claim 4 is amended as suggested by the Examiner.

In view of the above amendments and remarks, it is respectfully submitted that all grounds of rejection and objection have been avoided and/or traversed. It is believed that the case is now in condition for allowance and same is respectfully requested.

If any issues remain, or if the Examiner believes that prosecution of this application might be expedited by discussion of the issues, he is cordially invited to telephone the undersigned attorney for Applicants at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached paper is captioned "**Version with Markings to Show Changes Made**."

Respectfully submitted,

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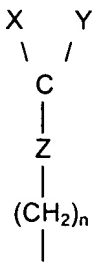
Version with Markings to Show Changes Made

4. (Four Times Amended) A peptide according to claim 1 wherein the peptide comprises a linear peptide selected from the group of peptides consisting of [SEQ ID NO 1, SFQ ID NO 2, SEQ ID NO 3, SEQ ID NO 4, SEQ ID NO 5, SEQ ID NO 6, SEQ ID NO 7, SEQ ID NO 8 and SEQ ID NO 9] SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8 and SEQ ID NO:9.

9. (Thrice Amended) A peptide according to claim 1 wherein the peptide is obtained by [the proteolytic treatment] post-translational modification of (pro)filaggrin, separation of peptide fragments formed by [proteolysis] post-translational modification and subsequent selection of the presence of a modified arginine residue in a peptide, which modified arginine residue was formed during the [proteolytic treatment] post-translational modification.

21. (First Amended) A peptide [having the] with an amino acid sequence selected from the group consisting of [SEQ ID NO 1, SFQ ID NO 2, SEQ ID NO 3, SEQ ID NO 4, SEQ ID NO 5, SEQ ID NO 6, SEQ ID NO 7, SEQ ID NO 8, SEQ ID NO 9 and SEQ ID NO 10] SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:7, SEQ ID NO:8, SEQ ID NO:9 and SEQ ID NO:10, wherein X therein is a modified arginine residue with a side chain of the formula:



wherein

X is NH_2, CH_3, $NHCH_3$ or $N(CH_3)_2$;

Y is O, NH, $NHCH_3$ or $N(CH_3)_2$;

Z is O, NH or CH_2; and

n = 2, 3 or 4, on the condition that when X = NH_3 and Z = NH, Y is not NH.